Joel M. Moskowitz, Ph.D.
Director, Center for Family and Community Health
School of Public Health, University of California, Berkeley

Website: http://www.saferemr.com
Facebook: http://www.facebook.com/SaferEMR
Twitter: @berkeleyprc

STORYLINE vs. REST-OF-THE-STORY: Brain cancer incidence, cellphone use, and trends data

Many countries monitor brain cancer incidence using cancer registries which document the number of new cases diagnosed each year. Although brain cancer is rare, about 25,000 cases will be diagnosed in the U.S. this year; the lifetime risk is between 1 in 200 and 1 in 250. Three case-control studies suggest that the risk may double after 10 years of heavy cellphone use. Only 35% of brain cancer patients survive for 5 or more years. Some scientists argue that brain cancer incidence has been stable over time so one need not worry about the findings from these controlled studies. However, the facts tell a different story.

STORYLINE	REST-OF-THE-STORY
"the incidence of brain cancer in the United States has remained steady since 1992, despite the stark increase in cellphone use." New York Times, May 28, 2016.	**Data quality issues:** • Accuracy of cancer registry data depends upon complete & timely reporting of tumors; reporting delays lead to underestimates of cancer for recent periods in most countries including the U.S. • Trends in cancer incidence are difficult to interpret due to changes in screening protocols & imaging technology over time (Coebergh et al, 2015, Siesling et al, 2015).
"a recently released Australian study found no increase in brain cancer rates since mobile phones became available there nearly three decades ago, and similar findings have been made in other countries." HealthDay News, May 27, 2016.	**Delay between cellphone use, tumor development and diagnosis:** • Research on cellphone use and brain tumors suggests that brain cancer may require one or more decades before it appears in tumor registry data.
"brain tumors have not increased in incidence in correlation with cellphone use. If cellphones were an important cause of brain tumors, we would have seen an increase perhaps starting in the 1990s, when cellphones came into widespread use, or starting several years later, if it took several years of cellphone use to cause a brain tumor." Journal Report , Wall Street Journal, May 22, 2016.	**Limited use of cellphones in early years:** • Three case-control studies suggest that long-term heavy cellphone use increases brain cancer risk; in the early years of cellphone adoption, cellphone use was limited due to its cost.
	Cordless phone use, a risk factor for brain cancer, preceded cellphone adoption: • In several countries, brain cancer incidence began to increase before cell phones were introduced, but not before cordless phones. Cordless phone radiation is similar to cellphone radiation & is associated with increased brain cancer risk in case-control research.
"If cell phones play a role in increasing the risk of brain cancer, rates would be expected to increase. However, between 1987 and 2008, SEER data shows that despite the sharp increase in heavy cell phone use in the U.S., the overall age-adjusted incidence of brain cancer did not increase." U.S. Food and Drug Administration, Oct. 1, 2014.	**Although authors may focus on the stability of overall brain cancer (glioma) incidence over time, data from ten nations show increases in specific subgroups or for specific types of tumors:** • among all adults: Norway, Finland. • among males: Australia, South Korea, England (in frontal & temporal lobes). • among females: Shanghai (China). • among young adults: USA, Japan. • among adults over age 70: Australia, New Zealand. • among all adults in temporal lobe: England. • among all adults for glioblastoma (most serious & common brain cancer): Denmark, Netherlands. • among all adults for glioblastoma in frontal & temporal lobes: USA.